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Strategic Information Systems Control Practices in New Zealand

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ABSTRACT

A very important issue for business management is how well Information Systems (IS) strategy is supporting its business strategy and direction, in the current and future business and information technology (IT) circumstances. The issue of monitoring, reviewing and maintenance of IS strategies from a strategic perspective, (strategic IS control), have enjoyed little attention by IS researchers in the past. The paper reports on a study to investigate current strategic IS control practices in New Zealand and to measure their level of effectiveness. A field survey of 123 New Zealand organisations provided the data for the study. The results show about 80% of NZ organisations practising IS planning also practise strategic oriented control over their strategic IS plans one way or another, and with varying degrees of effectiveness. Also, strategic IS control is found to significantly influence the performance of the strategic IS plan. In addition to increasing our understanding of the issue of strategic IS control and its current approaches, the significance of the study is two folds. First, the study proves the fact that strategic IS control impacts IS plan performance, and second, it provides a criteria that help IS practitioners to evaluate and set up their strategic IS control systems.

Key Words: IS planning, Strategic IS management, Strategic IS control, Strategic IS control effectiveness, IS plan performance.

1. Introduction

For many organisations, during the last two decades, information technology has become an attractive resource since it has proved to have the potential for improving the organisation's efficiency and effectiveness. However, the task of planning and implementing information systems and technology can be complex and expensive, and there have been success and failure stories of IS planning in practice. Therefore, the effective acquisition and utilisation of information systems and technology resources and how well the strategic IS plan performs in terms of supporting the business strategy have become very critical issues for organisations, especially those operating in a competitive environment.

Research by Galliers (1995) and Lederer and Sethi (1995), during the 1990s, has shown that problems emerging during the strategic IS management lifecycle, changes in organisational environment, or ineffective IS planning or implementation processes could render an IS plan or individual IS applications invalid or obsolete. Therefore, to

increase the chances of success for an IS plan or individual strategic IS application, the following actions need to be done:

1. emerging IS related problems or issues during strategic IS management process need to be resolved,
2. strategic IS management process needs to be improved, and
3. strategic IS plan needs to be monitored and reviewed against changes in the business and IT environment.

We propose that the problem of failing IS plans or individual IS applications lies in the lack of an effective strategically oriented control during the process of strategic IS management. Strategic control of IS strategies (Strategic IS Control) is concerned with the monitoring, reviewing and maintaining of IS strategies from a strategic perspective. Strategic IS control tries to ensure that IS strategies are performing well in terms of supporting the business strategy and direction in the current and future business and information technology circumstances. Addressing the problem of ineffective strategic control in IS practice can be accomplished by further developing the theory and improving the practice of strategic IS control.

Since the issue of studying the practice of strategic IS control has enjoyed little attention by IS researchers in the past, it is the purpose of this research to investigate current strategic IS control practices in New Zealand and to measure the level of effectiveness of the used approaches. This paper reports the results of the research, which are expected to enhance our understanding of the nature and level of effectiveness of current strategic IS control practices in New Zealand.

A field survey of 123 New Zealand organisations provided the data for the study. The results show about 80% of organisations practising IS planning also practise strategic oriented control over their strategic IS plans one way or another, and with varying degrees of effectiveness. Also, strategic IS control is found to significantly influence the strategic IS plan performance.

In the following section, a brief review of the literature of strategic control and its relationship to strategic IS management process is presented.

2. Literature Review

2.1 Strategic Control

The development of strategic plans involves setting the mission and strategic objectives of the organisation and deriving the best plan of action for achieving them. The implementation of strategic plans involves planning, co-ordinating, leading, and controlling the organisational resources for the purpose of facilitating the execution of the intended strategic plan. During and after the implementation of the strategic plans, unexpected implementation issues, problems or planning mistakes and unexpected changes in an organisation's circumstances can emerge.

Strategic process issues or changes in business circumstances are likely to affect performance attributes such as feasibility, consistency, capability, reliability and validity of the strategic plans and reduce their ability to achieve a business's strategic objectives during the business planning cycle. Therefore, it becomes necessary to

monitor, review and update the strategic plans accordingly (Rumelt 1980; Lorange 1993).

Bungay and Goold (1991) argue that in addition to the short-term financial budgetary measures, companies need some specific non-financial measures of the progress of their long-term strategies to build into their control systems. They argue that a strategic control system ensures that the immense effort often put into preparing lengthy and detailed strategic plans is in fact translated into action, and that the learning process is consolidated in the strategic planning process.

In addition to strategically oriented monitoring and reviewing the performance of a strategy, King and Cleland (1978) contend that a planning system that does not have a strategy for review and improvement of the efficacy of strategic planning efforts in the organisation is unlikely to achieve its fullest potential. Management control at the strategic level of business planning is referred to, in the literature, as *strategic control*.

2.2 Strategic IS Management and Strategic Control

The main reasons for strategic IS plans or individual IS applications becoming invalid or obsolete, as viewed by Baker (1995) are either changing business or IT environment or ineffective IS planning process. Researchers such as Galliers (1995) and Lederer and Sethi (1995) investigated the reasons for failing IS strategies and problems in applying the theory of IS planning and IS implementation successfully.

Based on the results of the research by Galliers (1995) and Lederer and Sethi (1995), during the 1990s, it is possible to conclude that the success of strategic IS plans is influenced by two groups of issues, coming from two directions:

1. The problems or practical issues that are related to the practice of strategic IS management process, that is planning and implementation for IS, and
2. The problems, issues and changes that emerge from the organisational and information technology environment external to IS function.

The above suggests that the problem of failing IS plans or IS applications is basically a result of less effective strategically oriented control. From a quality improvement perspective, to improve the chance of success of IS plans, it is necessary to improve the performance of the actual process that produces and implements the IS plans, that is, the strategic IS management process. This is supported by the view of Baker (1995), who believes that improving IS planning depends on the existence of effective feedback loop mechanisms in the IS planning process, which are in fact one aspect of the strategic IS control process.

Despite evidence of the importance of the strategic control function in the context of strategic IS management, so far, studying strategic control in the context of strategic IS management has enjoyed little attention from IS researchers. In the past two decades, IS researchers have concentrated more on developing models and approaches for IS planning and IS implementation, without giving much attention to the issue of strategically monitoring and reviewing IS plans and processes.

Tozer (1988), for example, has made brief suggestions about maintaining the IS strategy after its implementation. The author believes that an IS strategy needs to be altered in response to three types of circumstances:

- (1) significant change to business needs,
- (2) significant change to the opportunities offered by information technology, and
- (3) the regular annual business planning cycle.

However, the author's suggestions are limited to the issues of review and maintenance of the IS strategy only and ignore the issue of measuring performance of a strategic IS plan and strategic IS management process that produces and implements the IS plan. The author also ignores the issue of identifying and resolving the problems that could emerge during the strategic IS management process life cycle.

In relation to improving the link between the strategic business plan and strategic IS plan, Premkumar and King (1991) suggest the need for suitable organisational control mechanisms to ensure better communication between the strategic business planning and strategic IS planning. The linkage between strategic IS plans and strategic plans could also be improved if supported by feedback loop mechanisms existing in the strategic IS management process.

Baker (1995) argues strongly for further research on the issue of feedback loop mechanisms in IS planning. However, from a managerial perspective, feedback loop mechanisms are part of the management control system (Schoderbek 1990; Hill and Jones 1992). Therefore, it would be wise to investigate the whole issue of strategic IS control rather than parts of it.

Based on the above discussion, one may conclude that the existence of an effective monitoring and reviewing process of IS plans and the strategic IS management process from a strategic perspective contribute to improving the performance and capability of both strategic IS plans and strategic IS management process. The goal of improving the quality and effectiveness of strategic IS control in practice may be achieved in two steps. First, there should be a clear understanding as to what approaches of strategic IS control are used in practice, their level of effectiveness, and existing obstacles in current strategic IS control practices. Second, suggest solutions and guidelines for improving strategic IS control processes.

Therefore, the objectives of the proposed study are to:

- examine the nature and approaches of current strategic IS control practices,
- measure the level of effectiveness of current approaches of strategic IS control,
- measure the impact of strategic IS control on strategic IS plan performance, and
- identify the obstacles facing the process of strategic IS control in practice.

Because of the conceptual similarity and close link between strategic management and strategic IS management, the theory and practice of strategic control becomes relevant and applicable to strategic IS control. So, it is our intention to use the relevant strategic control concepts in the context of the proposed study.

3. Research Method

The main objectives of the research are to examine the current strategic IS control practices, and to measure the level of effectiveness of the used approaches. Due to the lack of currently available information on strategic IS control practices in general, this study is meant to be a descriptive research designed to inform both IS practitioners and researchers about current practices of strategic IS control in New Zealand, and their level of effectiveness.

The study uses the survey instrument for data collection because it is more practical than other methods for achieving our research objectives, and it allows access to a more diverse population than other methods of data collection (Sekaran 1992). Thus, it provides a higher degree of generality about the phenomena under study. Also, the survey results will lay the foundations for carrying out further detailed research using other methods such as the case study.

The views of IS managers or IS senior staff members were gathered through the questionnaire survey, which was sent to the IS or IT functions in 509 organisations selected by judgment mainly from the *New Zealand Business Who's Who* (published by New Zealand Financial press limited 2000). The sample organisations were selected on the basis that they are expected to have an established IS or IT function. Therefore, only medium and large New Zealand organisations with 50 or more employees were included in the sample.

The sample has included nearly all New Zealand organisations that use information intensively or operate in a competitive business environment, such as banking, education, insurance, local authorities and government departments.

3.1 Operational Measures

Due to the lack of an instrument for measuring the main research variables, the practice of strategic control and level of effectiveness of strategic IS control approaches, a measurement model was developed based on the proposed model for strategic control, and key issues of strategic control identified by previous researchers. The measurement model consists of three parts. The first part is concerned with identifying strategic IS control approach. The second part consists of a criteria for measuring the variable strategic IS control effectiveness, and the third part is concerned with measuring the variable strategic IS plan performance. All measures use multiple item questions.

To identify the kind of approaches of strategic IS control currently used in practice, three groups of questions were designed based on the principle elements of the proposed model for strategic control, in Figure 1, Appendix A. One group deals with the way organisations monitor their strategic IS plans. The second group deals with the issue of monitoring each organisation's environment. The third group deals with the issue of reviewing the strategic IS plan, strategic IS management process and existence of feedback loops.

The measurement of effectiveness level of strategic IS control is based on evaluating two elements:

1. the process (Hershfield 1972 page 9 cited in McDonald and Micikas 1994) and

2. goals of the process (McClure 1990 page 7 cited in McDonald and Micikas 1994).

While the suggested measure of strategic IS control effectiveness uses 20 questions (items) covering the process side, 5 questions are used to measure the level of achievement of objectives of strategic IS control process in terms of the IS plan performance characteristics.

The measurement of strategic IS plan performance is based on performance attributes such as feasibility, consistency, capability, reliability and validity of strategic IS plans.

4. Findings of the Study

The study used SPSS (Statistical Program for Social Scientists), version 10, for carrying out the statistical analysis and tests on the collected data. A total of 123 questionnaires were returned out of 509, giving a response rate of 24%. The achieved response rate may be regarded as reasonable considering the length of the questionnaire.

The basic data groups identified from the returned questionnaires are shown in Table 4.1 and Table 4.2. Table 4.1 shows around 72% of New Zealand organisations are currently practising IS planning, and around 28% are not practising IS planning. Table 4.2 shows that among the IS planning group, 85% are practicing strategic IS control one way or another, and 15% are not practising strategic IS control, but instead they use budgetary control only.

Group	Count	Percentage %
Practising Strategic IS planning	89	72.35
Not Practising Strategic IS planning	34	27.65
Total	123	100.00

Table 4.1 Strategic IS planning in New Zealand

Group	Count	Percentage %
Practising Strategic IS Control	76	85.39
Not Practising Strategic IS Control	13	14.61
Total	89	100.00

Table 4.2 Strategic IS Control in New Zealand

The demographic results of the study are divided into two groups: the organisation's characteristics and IS function's characteristics of participating SIS control organisations. The organisation's characteristics represent percentage distribution of the organisation's size, structure, industry type and level of competitiveness respectively. It is found around 80% of organisations which practice strategic IS control are large organisations (see Table 4.3), and 33% of practicing organisations have functional structure, and 52% have divisional organisational structure (see Table 4.4). Table 4.5 shows that 15% employ a centralised authority, 50% employ moderately centralised authority, and 35% employ a more decentralized authority. Strategic IS control organisations are found approximately evenly distributed over industry type and 75% of them are operating in industry environments ranging from competitive to very competitive.

On the other hand, the results pertaining to IS characteristics of strategic IS control organisations, indicate that 70% of IS functions in strategic IS control organisations group employ one to 20 IS staff (see Table 4.6). Intensity of IS use results indicate that 80% of strategic IS control organisations use information systems intensively (see Table 4.7). Furthermore, it is found that most strategic IS control organisations plan for IS on short (1 to 2 years) to medium term (3 to 5 years) basis and very few plan on longer term (5 to 10 years) basis.

Organisational Size	Percentage % of Organisations
Less than 151 employees	20
151 or more employees	80
Total	100

Table 4.3 Organisational Size of Strategic IS Control Organizations

Organisational Structure	Percentage % of Organisations
Divisional	52
Functional	33
Others	15
Total	100

Table 4.4 Organisational Structure of Strategic IS Control Organizations

Organisational Authority	Percentage % of Organisations
Centralised	15
Moderately Centralised	50
Decentralised	35
Total	100

Table 4.5 Organisational Authority of Strategic IS Control Organizations

IS Function Size	Percentage % of Organisations
1 to 20 IS employees	70
More than 20 IS employees	30
Total	100

Table 4.6 IS Function Size in Strategic IS Control Organizations

Intensity of IS Use	Percentage % of Organisations
Intensive use of IS	80
Less intensive use of IS	20
Total	100

Table 4.7 Intensity of IS Use in Strategic IS Control Organizations

4.1 Approaches of Strategic IS Control

Based on the collected data pertaining the approach section of the questionnaire, three approaches of strategic IS control have been identified. These approaches are:

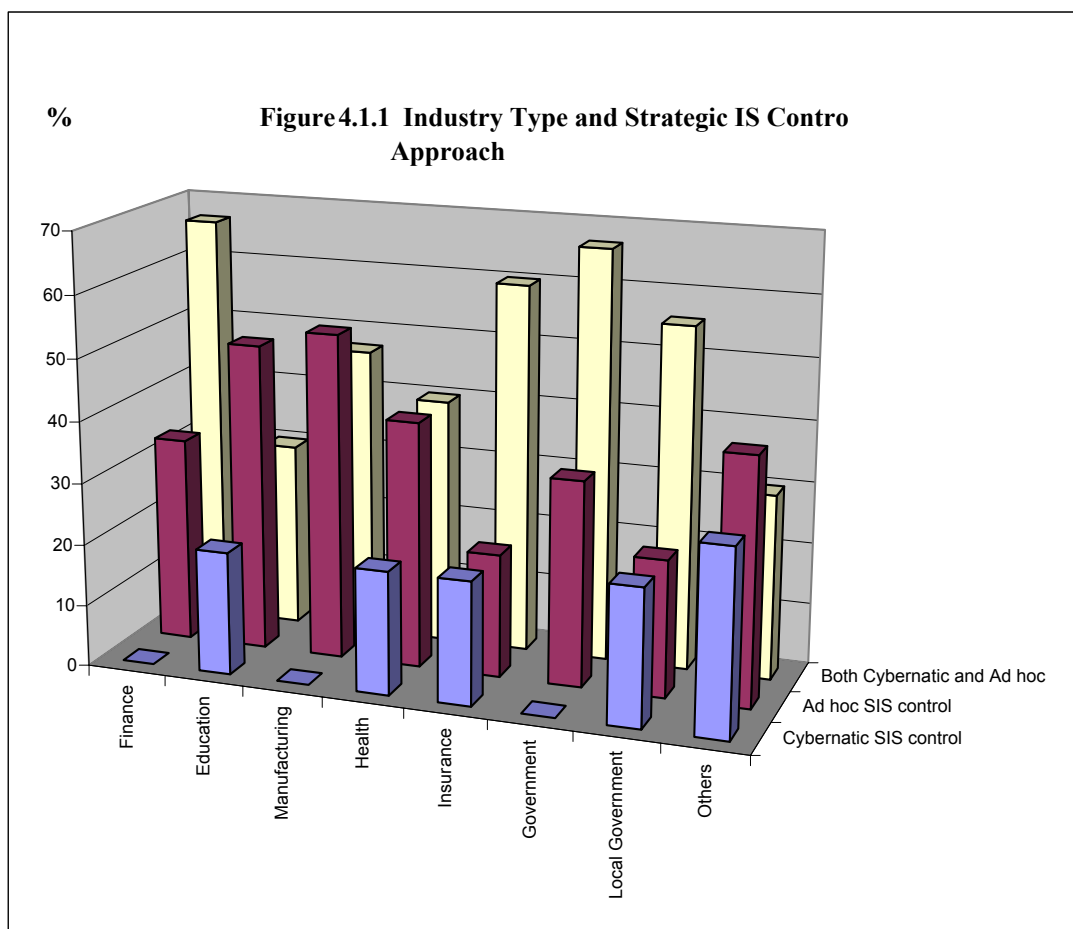
1. cybernetic control approach
2. ad hoc approach
3. cybernetic and ad hoc approach

The cybernetic strategic IS control approach involves monitoring and reviewing the achievement of strategic targets based on proper measurement of the strategic performance of the strategic IS plans. Ad hoc strategic IS control approach, on the other hand, involves monitoring and reviewing the achievement of strategic targets on the basis of an ad hoc monitoring and estimation of the strategic performance of the strategic IS plans.

The combination of cybernetic and ad hoc strategic IS control is an approach where monitoring of performance of strategic IS plans is based on the use of performance

measurement as well as ad-hoc monitoring. So, the determining factor of the approach is the way strategic monitoring of strategic IS plan is done. Also, the results of the study shows that 78% of organisations lack a documented model that describes and documents the steps and procedures involved in a strategic IS control process.

Figure 4.1.1 presents a graphical representation of industry type and use of strategic IS control approaches. It indicates that the approach of strategic IS control is distributed evenly over the industry type, which suggest there is no specific pattern or strong relationship between strategic IS control approach and the type of industry of SIS control practising organisations. Figure 4.1.2 presents a graphical representation of level of competitiveness in which practicing organisations are operating and use of strategic IS control approaches. It indicates that practising organisations, which are operating in a more competitive environment, tend to use the cybernetic approach rather than the less effective ad hoc approach



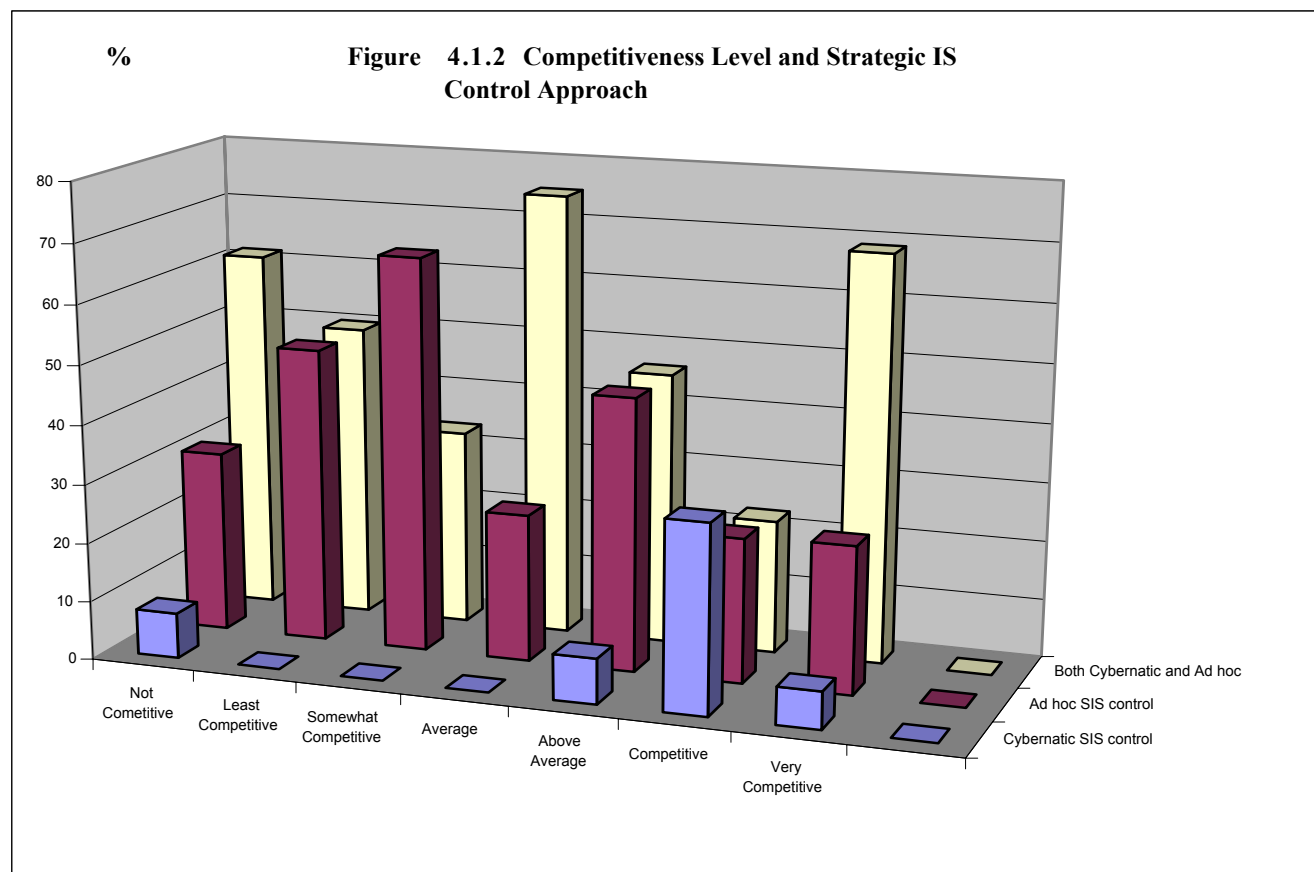


Figure 4.1.2 suggests the need for using a proper and more effective approach for strategic IS control in organisations operating in highly competitive industry environment or using information systems and technology intensively. This is due to the fact that performance of strategic IS plans is more critical to organisations operating in higher competitive environment or using IT intensively. The following section presents results pertaining to the measurement of strategic IS control effectiveness.

4.2 Effectiveness Level of Strategic IS control Approaches

The effectiveness level of the approach used by a particular organisation is found by calculating the mean value of all answers to the seven point Likert scale of the measure's items (questions). The effectiveness level of a particular approach for strategic IS control is found by calculating the average of effectiveness level values of all organisations using that particular approach. Then, the calculated average value of effectiveness level is translated into the corresponding value on a seven point Likert scale developed for strategic IS control effectiveness.

The average effectiveness values and corresponding scale values are shown in Table 4.2.1. Table 4.2.1 indicates the cybernetics SIS control approach is more than adequate, the ad hoc control approach is adequate, and the combined cybernetics and ad hoc approach is more than adequate.

The result of analysing the obstacles currently existing in the practice of strategic IS control indicate that major obstacles exist in current practice of strategic IS control are lack of time, lack of tools, and lack of knowledge and expertise.

Strategic IS Control Approach	Number of practising Organisations	Mean Value of Effectiveness Level	Standard Deviation	Scale Value of Effectiveness Level
Cybernetic Control	10	5.03	0.43	5 = More than Adequate
Ad-hoc Control	28	4.56	0.83	4 = Adequate
Cybernetic and Ad-hoc Control	35	4.81	0.85	5 = More than Adequate

Table 4.2.1 Strategic IS Control Approaches and their Level of Effectiveness

4.3 Analysis of Relationships

The research variables, strategic IS plan performance and strategic IS control effectiveness, were measured using multi-item measures. In order to ensure the proposed measures are reliable and valid, Cronbach's alpha test and principle components factor analysis were used. The results of the analysis indicate the used measures exhibit sufficient reliability and validity to be considered as reliable measures of the research variables.

In the introduction, when defining the research problem, we assumed that effective control of the IS strategy and planning process from a strategic perspective is important for achieving better IS plan performance. To disproof our assumption, the relationship between the two constructs, effective strategic IS control and IS plan performance, should be found weak, otherwise our assumption would not be incorrect. Since the research variables are categorical, then Spearman rank correlation analysis has been used to determine the degree of impact of strategic IS control effectiveness on IS plan performance.

The calculated Spearman rank correlation coefficient for measuring the relationship between strategic IS control effectiveness and IS plan performance is found 0.619, as shown in Table 4.3.1. Since the value of the generated correlation coefficient is close to 1.0, then the relationship between the two variables is strong. This finding is

Symmetric Measures

		Value	Asymp. Std. Error	Approx. T	Approx. Sig.
Interval by Interval	Pearson's R	.727	.064	8.923	.000
Ordinal by Ordinal	Spearman Correlation	.619	.083	6.636	.000
Number of Valid Cases		73			

Table 4.3.1 Calculation of Spearman Rank Correlation between strategic IS plan performance and strategic IS control effectiveness

supported by the scatter diagram in Figure 4.3.1, which indicates the existence of a strong positive relationship between strategic IS control effectiveness and strategic IS plan performance. Since the relationship is positive and strong, then strategic IS control effectiveness is significantly influencing strategic IS plan performance.

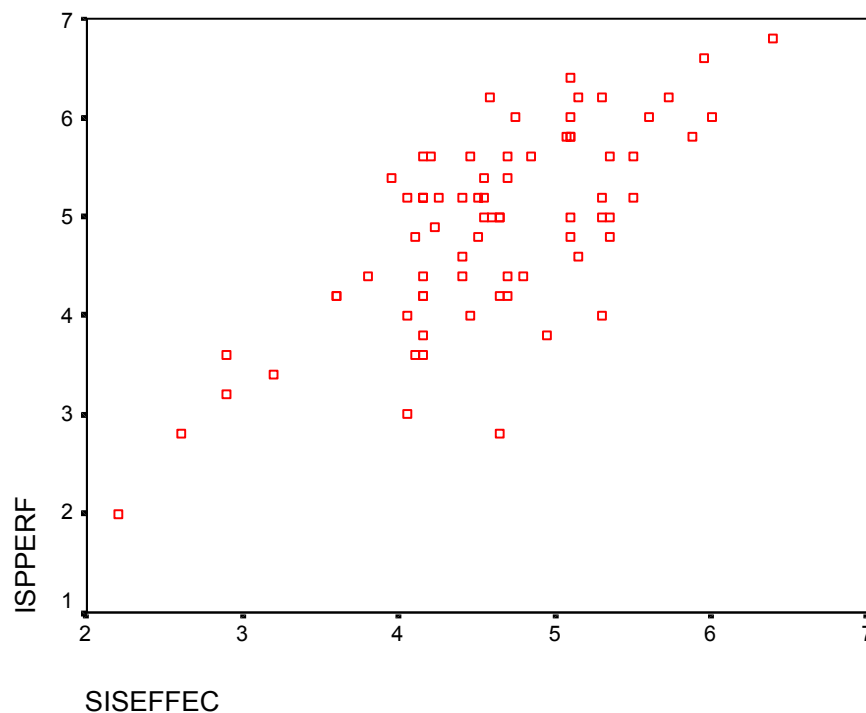


Figure 4.3.1 Scatter diagram of Strategic IS Control Effectiveness and SIS plan performance

5. Discussion

Based on the data analysis, three approaches of strategic IS control have been identified namely: the cybernetic approach, the ad hoc approach, and the combined approach that is based on cybernetic and ad hoc monitoring. The cybernetic strategic IS control approach and the combined approach are found to be more effective than the ad hoc control approach. The results of the study highlight the need for using a more formal approach such as the cybernetics strategic IS control. All approaches of strategic IS control involve monitoring and reviewing performance of strategic IS plans from a strategic perspective, and monitoring the internal and/or external business and IT environment.

It has been found that most strategic IS control practising organisations implement regular review of the strategic IS plans as part of their annual planning cycles. However, some of the organisations that implement regular reviews implement additional unplanned reviews in response to any changes or events that can have significant impact on the performance of their strategic IS plans. It has also been found, that 70% of organisations that review their IS plans review their strategic IS management process as well, and with the presence of information feedback loops. This is consistent with the results of 80% of strategic IS control organisations have a learning process that involves feedback loops flowing from the review of IS plans to the strategic IS management process.

The found strong and positive relationship between strategic IS control effectiveness and IS plan performance emphasises the importance of an effective strategic IS control process for achieving higher level of strategic IS plan performance.

6. Limitations of the Study

It is possible that data collected from organisations include an element of response bias. This is due to the fact the data collection survey method adopted in the study uses single informant or respondent for practical reasons. However, given the overwhelming statistical analysis support, this limitation do not seem threatening to the results and conclusions of the study. The following outline the conclusions and recommendations for further research.

7. Conclusions and recommendations for further research

The objectives of the study were to investigate current practices of the strategic oriented control of strategic IS plans, to measure their level of effectiveness in New Zealand organisations, and to identify obstacles facing strategic IS control in practice. Also, a secondary aim of the study was to measure the impact of strategic IS control on IS plan performance. To achieve the objectives of the research, a survey questionnaire was found the most suitable method for gathering the required data from the selected sample organisations.

The construct strategic IS control effectiveness is found to significantly influence IS plan performance, which supports the paper's view, that effective control from a strategic perspective could dramatically increase the chance of success of IS plans. Three approaches of strategic IS control have been identified namely: cybernetic, ad hoc and a combined approach of both cybernetic and ad-hoc. The cybernetic and combined approaches are found more than adequate, while the ad-hoc is found to be just adequate. Therefore, practitioners need to consider using the cybernetic approach, especially in those organisations operating in higher competitive environments.

In addition, the study identified three major obstacles facing the practice of strategic IS control, namely: lack of time, lack of tools and lack of knowledge and skills. The results also reveal that most organisations lack a model for guiding the process of strategic IS control. The identified obstacles suggest further research may be possible in the following areas:

- the investigation of the kind of performance measures used in practice for evaluating strategic performance of strategic IS plans and how are they defined and implemented, and identify any shortcomings, and suggest possible improvement.
- an in depth investigation of how are strategic IS plans and strategic IS management process being reviewed and maintained in practice, and the nature and use of feedback information generated from the review process. Also, identify existing problems and possible improvements.
- the development of a model for guiding strategic IS control activities.
- the investigation the possibility of developing a computer-based tool for assisting and documenting the processes of monitoring and reviewing both the strategic IS plans and strategic IS management process.

Furthermore, IS researchers need to pay more attention to the issue of strategic IS control in their teaching courses or when writing textbooks on strategic IS management.

References

- Applegate, L. M., McFarlan, F. W. and Mckenney, J. L. "Corporate Information Systems Management: Issues Facing Senior Executives," Forth Edition, IRWIN Inc, 1996.
- Baker, Bernadette "The role of feedback in assessing information systems planning effectiveness," Journal of strategic information systems, 4(1), pp 61-80, 1995.
- Brancheau, J. C., Wetherbe, J. C. "Key Issues in Information Systems Management," MIS Quarterly, March, 1987.
- Bungay, S. and Goold, M. "Creating a Strategic Control System," Long Rang Planning, Vol. 24, No. 3, pp. 32-39, 1991.
- Cash, Jr., J. I., McFarlan, F. W., Mckenney, J. L., Applegate, L. M. "Corporate Information Systems Management: Text and Cases ", Third Edition, IRWIN Inc., 1992.
- Earl, Michael J. "Management Strategies for Information Technology", Business Information Technology Series, Prentice Hall, 1989.
- Frenzel, Carrol W. "Management of Information Technology", Third edition, Course Technolog, 1999.
- Galliers, R. D. "Strategic Information Systems Planning: Myths, Reality and Guidelines for Successful Implementation," in Strategic Information Management, by Galliers, R. D. and Baker, B. S. H. (eds), ButterWorth-Heinemann Ltd, 1995.
- Goold, M. and Quinn, John J. "Strategic Control: Establishing Milestones for Long-Term Performance," Addison-Wesley Publishing Company, 1990.
- King, William R. and Cleland David I. "Strategic Planning and Policy," Van Nostrand Reinhold Company, 1978.
- Lederer, A. L. and Sethi, V. "Meeting the Challenges of Information Systems Planning" in Strategic Information Management, Galliers, R. D. and Baker, B. S. H. (eds), ButterWorth-Heinemann Ltd, 1995.
- Lorange, P. "Strategic Planning and Control: Issues in the Strategy Process," BLACKWELL Publishers, 1993.
- New Zealand Financial Press Limited "The New Zealand Business Who's Who," The New Zealand Financial Press Limited, 2000.
- McDonald, J. A., Micikas, Lynda B. "Academic libraries: The Dimensions of their Effectiveness," Greenwood Press, 1994.
- O'Brien, James, A. " Management Information Systems: Managing Information Technology in the Networked Enterprise", Third Edition, Richard D. IRWIN Inc., 1996.
- Pearce II, John A., and Robinson, Jr., R. B. " Strategic Management: Strategy formulation and Implementation," Richard D. IRWIN Inc., 1982.
- Premkumar, G. and King, W. R. "Assessing Strategic Information Systems Planning," Long Range Planning, Vol. 24, No. 5, pp. 41-58, 1991.

- Premkumar, G. and King, W. R. "Organisational Characteristics and Information Systems Planning: An Empirical Study," *Information Systems Research*, 5:2, 75-107, 1994.
- Robson, Wendy (1997) "Strategic Management & Information Systems" , Second dition, Pitman Publishing, London.
- Schoderbek, Peter P., Schoderbek, Charles G., Kefalas Asterios G. "Management Systems: Conceptual Considerations," IRWIN, 1990.
- Sekaran, U. " Research Methods for Business: A Skill Building Approach," Second Edition, John Wiley & Sons, Inc., 1992.
- Tozer, Edwin E. "Planning for Effective Business Information Systems," Pergamon Press, 1988.
- Ward, John, Griffiths, Pat, Whitmore, P. "Strategic Planning For Information Systems," Wiley Series in Information Systems, 1990.
- Watson, R. T., Kelly, G. G., Galliers, R.D. and Brancheau, J. C. "Key Issues in information Systems Management: An International Perspective," *Journal of Management Information Systems*, Spring, Vol. 13, No. 4, pp. 91-115, 1997.